

**Notice of Allowability**

Application No.

10/750,573

Examiner

Marie A. Weiskopf

Applicant(s)

HERR ET AL.

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/29/07.
2. ☒ The allowed claim(s) is/are 1-30.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All   b) ☐ Some\*   c) ☐ None   of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

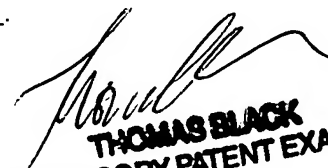
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                     |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other _____   |

  
**THOMAS BLACK**  
**SUPERVISORY PATENT EXAMINER**

## **DETAILED ACTION**

### ***Allowable Subject Matter***

1. Claims 1-30 are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter: the prior art, individually or in combination, fails to disclose, teach or suggest in regard to claim 1, computing an apex height return map of two consecutive flight phases for different angles of attack, selecting all pairs of leg angle and apex heights that result in a desired apex height of a next consecutive flight phase, for each leg angle-apex height pair, computing the corresponding flight times from apex to touch-down and storing dependencies between flight time after apex and leg angle for any desired consecutive apex heights. The closest prior art, "The Bow Leg Hopping Robot" by Zeglin, discloses being able to determine the angle of attack as the robot is landing (Chapter 5) but fails to specifically disclose computing an apex height and computing the corresponding flight times from apex to touch-down. Claims 2-9 further define the invention.

The prior art, individually or in combination, fails to disclose, teach or suggest in regard to claim 10, determining a time to apex and selecting an angle of attack based upon time after apex. As discussed above, the closest prior art discloses being able to determine the angle of attack as landing and provides rotational leg control continuously (Chapter 4 and 5), but does not disclose determining a time to apex and selecting the angle of attack based upon that time. Claims 11-21 further define the invention.

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The prior art, individually or in combination, fails to disclose, teach or suggest in regard to claim 22 a controller, coupled to the body and responsive to the control signals, to determine for a next contact phase an angle of attack to reach a desired apex height in a flight phase following the next contact phase. As discussed above the prior art does disclose being able to determine the angle of attack as landing and provides an actuator to adjust orientation of the leg during a flight phase, but fails to disclose determining a next contact phase an angle of attack to reach a desired apex height. Claims 23-26 further define the invention.

The prior art, individually or in combination, fails to disclose, teach or suggest in regard to claims 27 and 28, identifying energetic control elements of the leg to control system energy within the robotic locomotion device. Claims 29-30 further define the invention.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marie A. Weiskopf whose telephone number is (571) 272-6288. The examiner can normally be reached on Monday-Thursday between 7:00 AM and 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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